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REMARKS

By way of summary, Claims 1-36 were pending in this application. No new claims are added herein. Claim 15 is amended herein. Accordingly, Claims 1-36 remain pending for consideration.

This application is directed to shrouds, head-stack assemblies, and disk drives. A disk drive has at least one disk housed within an enclosure. The disk spins during operation, which generates airflow within the enclosure. The airflow impinges upon components, such as at least one actuator arm and a flex cable that conveys signals to and from at least one read/write head coupled with the actuator arm. The flex cable has a spanning portion that extends between the actuator arm and a structure that secures a portion of the flex cable to the enclosure. The spanning portion is exposed to the airflow generated by the spinning disk. The airflow also impinges on the actuator arm, which extends over the disk to position the read/write head. The impinging airflow causes the flex cable and the actuator arm to vibrate. The vibrations propagate to the read/write head and can cause significant movement of the read/write head relative to a track on the disk. Such movement can render the disk drive non-functional, particularly if the disk drive has relatively high track density. This application discloses disk drives that have shrouds that at least partially shield components from the airflow. For example, the shrouds advantageously shield the flex cable (e.g., a spanning portion of the flex cable), the actuator arm, or the flex cable and the actuator arm from the airflow.

Amendment to the Specification

In the Office Action, the Examiner requests that a new title be given to the application. Applicants have amended the title to read “DISK DRIVE HAVING A SHROUD ASSEMBLY FOR SHIELDING AT LEAST ONE OF A FLEX CABLE AND AN ACTUATOR ARM.” Applicants respectfully request the Examiner to withdraw the objection to the title.

Rejection of Claims 1, 2, and 5-36 Under 35 U.S.C. § 102 in view of Wood

The Examiner rejects Claims 1, 2, and 5-36 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 5,907,453 to Wood et al. (Wood). Applicants disagree with the Examiner’s characterization of Wood and respectfully traverse the rejections as to Claims 1, 2, 5-14, and 16-36. Applicants have amended Claim 15 to clarify the distinction between Claim 15 and Wood and to expedite allowance of the application.

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Wood

Wood does not have any structure that shields any portion (e.g., a spanning portion) of a flex cable or an actuator arm over a disk. Figure 1 of Wood discloses a disk drive 100 that includes a plurality of disks 104 that are mounted to a spindle motor 106 for rotation. An actuator assembly 114 is pivoted about a bearing assembly 118 in a conventional manner by a voice coil motor (VCM) 120 to position heads 110 that write to the disks 104. The VCM 120 includes a coil 122. A flex assembly 132 is electrically connected to the actuator assembly 114 and terminates at a flex bracket 136. However, as can be seen in Figure 1, the bracket 136 does not in any way shield any portion, e.g., a spanning portion, of the flex assembly 132 from airflow, e.g., air flowing from the direction of the coil 122 toward the flex assembly 132.

Moreover, Wood actually teaches *channeling more airflow* toward the coil 122 to enhance convective cooling of the coil 122. Increasing airflow toward the coil 122 will have the opposite effect of the shroud as recited in several of the claims. An air foil 140 and a baffle 168 form a gap through which a portion of the airflow generated by rotation of the disk 104 is channeled, by way of the venturi effect, toward the VCM 120. The airflow is channeled along a path denoted by arrow 170. (Column 6, lines 33-39.) Increased airflow to the coil 122 also results in a corresponding increase in airflow in the vicinity of the flex assembly 132. Moreover, turbulent airflow also will increase due to interaction of the channeled airflow with the coil 122 and other components in the vicinity between the coil 122 and the flex assembly 132. Thus, the arrangement of Wood increases airflow and turbulence of the airflow, which increases vibration of a spanning portion of the flex assembly 132 due to the airflow.

Claims 1, 2, and 5-12

In contrast to Wood, Claim 1 recites, among other limitations, a shroud assembly comprising “a cable shrouding portion *configured to shield a spanning portion of the flex cable between the cable mounting portion and the actuator assembly from airflow* generated by the rotation of the rotatable disk.” As discussed above, Wood does not teach or suggest at least these limitations of Claim 1. Therefore, Applicants respectfully submit that Claim 1 is patentably distinguished over Wood, and Applicants request allowance of Claim 1. Claims 2 and 5-12 depend from Claim 1 and further define the invention defined in Claim 1. For at least the reasons set forth above with respect to Claim 1, Applicants respectfully submit that Claims 2 and 5-12 are patentably distinguished over Wood. Claims 2 and 5-12 also are patentably distinguished over Wood in view of the additional

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limitations defined in each of the claims. Therefore, Applicants respectfully request allowance of Claims 2-4.

Claim 13

Claim 13 also recites a shroud assembly for a disk drive. The shroud comprises, among other limitations, “a cable shrouding portion *configured to shield a spanning portion of the flex cable between the cable mounting portion and the actuator assembly from airflow* generated by the rotation of the rotatable disk.” As discussed above, Wood does not teach or suggest at least these limitations of Claim 13. Therefore, Applicants respectfully submit that Claim 13 is patentably distinguished over Wood, and Applicants request allowance of Claim 13.

Claim 14

Similarly, Claim 14 recites a shroud assembly for a disk drive. The shroud assembly comprises, among other limitations, “a cable shrouding portion *configured to shield a spanning portion of the flex cable between the actuator assembly and the printed circuit board from airflow* generated by the rotation of the rotatable disk.” As discussed above, Wood does not teach or suggest at least these limitations of Claim 14. Therefore, Applicants respectfully submit that Claim 14 is patentably distinguished over Wood, and Applicants request allowance of Claim 14.

Claim 15

With respect to Claim 15, Applicants note that Wood’s configuration will have the opposite effect of an arm shroud because, as discussed above, Wood is specifically configured to increase airflow impinging on the coil 122. Increased airflow toward the coil 122 will increase vibration of the coil 122. As can be seen in Figure 1, the coil 122 is connected to the actuator assembly 114 about the bearing assembly 118. Vibrations at the coil 122 will be conveyed to the actuator arm through the bearing assembly 118. Thus, the shape and location of gap defined between the air foil 140 and baffle 168 will cause the vibration of the actuator arm to increase due to turbulent air flow over the coil 122. Thus, the structure and arrangement of Wood will have the opposite effect of a shroud.

Although the effect of the Wood arrangement is the opposite of the claimed shroud, Applicants have amended Claim 15 in order to expedite allowance of the application. Amended Claim 15 recites, among other limitations, a shroud assembly comprising “an arm shrouding portion integrally formed with the cable mounting portion, the arm shrouding portion configured to extend over a portion of the rotatable disk and to shield an actuator arm from airflow generated by the

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rotation of the rotatable disk.” Wood does not teach or suggest at least these limitations of amended Claim 15. Therefore, Applicants respectfully submit that amended Claim 15 is patentably distinguished over Wood, and Applicants request allowance of amended Claim 15.

Claim 16

Claim 16 recites a shroud assembly for a disk drive. The shroud includes, among other limitations, a cable shrouding portion *“configured to shield a spanning portion of the flex cable between the cable mounting portion and the actuator assembly from airflow generated by the rotation of the rotatable disk.”* Wood does not teach or suggest at least these limitations of Claim 16. Therefore, Applicants respectfully submit that Claim 16 is patentably distinguished over Wood, and Applicants request allowance of Claim 16.

Claims 17 – 25

Claim 17 recites a head-stack assembly for a disk drive. The head-stack assembly comprises, among other limitations, a shroud assembly comprising *“a cable shrouding portion configured to shield a spanning portion of the flex cable between the cable mounting portion and the actuator assembly from airflow generated by the rotation of the rotatable disk.”* Wood does not teach or suggest at least these limitations of Claim 17. Therefore, Applicants respectfully submit that Claim 17 is patentably distinguished over Wood, and Applicants request allowance of Claim 17. Claims 18-25 depend from Claim 17 and further define the invention defined in Claim 17. For at least the reasons set forth above with respect to Claim 17, Applicants respectfully submit that Claims 18-25 are patentably distinguished over Wood. Claims 18-25 also are patentably distinguished over Wood in view of the additional limitations defined in each of the claims. Therefore, Applicants respectfully request allowance of Claims 18-25.

Claims 26-36

Claim 26 recites a disk drive comprising, among other limitations a shroud assembly comprising *“a cable shrouding portion configured to shield a spanning portion of the flex cable between the cable mounting portion and the actuator assembly from airflow generated by the rotation of the rotatable disk.”* Wood does not teach or suggest at least these limitations of Claim 26. Therefore, Applicants respectfully submit that Claim 26 is patentably distinguished over Wood, and Applicants request allowance of Claim 26. Claims 27-36 depend from Claim 26 and further define the invention defined in Claim 26. For at least the reasons set forth above with respect to Claim 26, Applicants respectfully submit that Claims 27-36 are patentably distinguished over Wood. Claims

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27-36 also are patentably distinguished over Wood in view of the additional limitations defined in each of the claims. Therefore, Applicants respectfully request allowance of Claims 27-36.

Rejection of Claims 3 and 4 Under 35 U.S.C. § 103 in view of Wood

The Examiner rejects Claims 3 and 4 under 35 U.S.C. § 103 as being unpatentable over Wood. The Examiner notes that Wood is silent as to the limitations recited in Claims 3 and 4. The Examiner also asserts that the subject matter of these claims would have been obvious to one of skill in the art. Applicants respectfully traverse these rejections because, as discussed above, even if Wood is modified as the Examiner suggests, Wood fails to teach or suggest the limitations of Claim 1 from which Claims 3 and 4 depend. See M.P.E.P. § 2143 (stating that in order to establish a *prima facie* case of obviousness for a claim, the prior art references must teach or suggest all the claim limitations). Accordingly, Applicants respectfully submit that for at least these reasons, Claims 3 and 4 are patentably distinguished over Wood. Applicants respectfully request allowance of Claims 3 and 4.

CONCLUSION

For the foregoing reasons, Applicants respectfully submit that the present application is in condition for allowance, and Applicants respectfully request that a Notice of Allowance be issued at the earliest opportunity.

Respectfully submitted,

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